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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/715,787

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Peter A. Barany

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EXAMINER

MEW, KEVIN D

ART UNIT

PAPER NUMBER

2616

DATE MAILED: 12/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/715,787

Applicant(s)

BARANY ET AL.

Examiner

Kevin Mew

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-16,18-29,31-34 and 36-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5-12,14-16,18-29,31-33,37-39 and 41 is/are allowed.
- 6) ☒ Claim(s) 1,3,4,13,34,36 and 40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/9/04</u> . | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

Response to Amendment

1. Applicant's arguments filed on 12/19/2005 regarding claims 1, 3, 4, 13, 31-34, 36, 39-41 have been considered. Claims 1, 3-16, 18-29, 31-34, 36-41 are currently pending in the application. Claims 2, 17, 30 and 35 have been canceled by applicant.
2. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 34, 40 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 34, line 1, recites "A data signal embodied in a carrier wave" and claim 40, line 1 recites "The data signal of claim 34," and they are both non-statutory. Claims that recite nothing but the physical characteristics of a form of energy, such as a frequency, voltage, or the strength of a magnetic field, define energy or magnetism, per se, and as such are nonstatutory natural phenomena. O'Reilly, 56 U.S. (15 How.) at 112-14. Moreover, it does not appear that a claim reciting a signal encoded with functional descriptive material, such as "a carrier wave," falls within any of the categories of patentable subject matter set forth in § 101.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 3 are rejected under 35 U.S.C. 102(e) as being anticipated by Gorday et al. (USP 6,426,980).

Regarding claims 1, Gorday discloses a method of interleaving speech data over a plurality frames (**interleaving a plurality of calls over a plurality of interleaving blocks**, col. 4, lines 50-58 and Fig. 3), comprising:

interleaving the speech data according to a first algorithm (**first interleaver interleaves a first set of calls into I-channel bit stream**, col. 4, lines 50-54) over plural frames communicated over a wireless channel (**multiplexed bit stream transmitted to the wireless communication device 35 over the outbound RF channel 32**, col. 5, lines 1-6 and Fig. 1) for a first set of speech data (**for a first set of calls**, col. 4, lines 50-54); and

interleaving the speech data according to a second algorithm (**second interleaver interleaves a second set of calls into Q-channel bit stream**, col. 4, lines 54-58) over plural frames communicated over the wireless channel (**multiplexed bit stream transmitted to the wireless communication device 35 over the outbound RF channel 32**, col. 5, lines 1-6 and Fig. 1) for a second set of speech data (**for a second set of calls**, col. 4, lines 50-54).

Regarding claim 3, Gorday discloses the method of claim 1, wherein interleaving the data according to the first or second algorithm comprises interleaving over frames (**interleaving over blocks according to the first interleaver**) of a multiframe (**of a QAM bit stream**, Fig. 3).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gorday et al. in view of Olofsson et al. (USP 6,134,230).

Regarding claim 4, Gorday discloses all the aspects of claim 3 above, except fails to explicitly show the method of claim 3, wherein interleaving over frames of the multiframe comprises interleaving over a General Packet Radio Service multiframe.

However, Olofsson discloses a GPRS system that utilizes 16-bit QAM modulation scheme (col. 2, lines 46-67, col. 3, lines 1-3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the interleaving system and method of Gorday with the teaching of Olofsson in using 16-bit QAM modulation in a GPRS system such that the QAM bit stream/multiframe of Gorday will be formatted as GPRS frame.

The motivation to do so is to provide the capability to vary the user bit rate such that a higher voice quality is achieved by using a higher user bit rate.

6. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gorday et al. in view of Hakansson et al. (US Publication 2004/0062274).

Regarding claim 13, Gorday discloses all the aspects of claim 3 above. the method of claim 3, wherein the multiframe (QAM bit stream) comprises plural blocks (**plurality of interleaving blocks**, Fig. 3) and wherein interleaving the data frames according to the first and second algorithms (**first interleaver interleaves a first set of calls into I-channel bit stream and second interleaver interleaves a second set of calls into Q-channel bit stream**, col. 4, lines 50-58).

Gorday does not explicitly show each block comprises plural frames, each frame containing plural bursts, the data being carried in data frames interleaved over bursts in the plural frames, and receiving an end-of-data indicating frame to indicate that a data frame is the last data frame; and interleaving the end-of-data indicating frame according to predetermined algorithms, wherein the end-of-data indicating frame according to the predetermined algorithms enables the end-of-data indicating frame to end within the same block carrying the last data frame.

However, Hakansson discloses a block that comprises plural frames (**see the TDMA frames in each block in Figs. 5 and 6**), each frame containing plural bursts (**see the bursts in each frame in Figs. 5 and 6**), the data being carried in data frames interleaved over bursts in the plural frames (see lines 1-12, paragraph 0027 and Figs. 5 and 6), and a method comprising:

receiving an end-of-data indicating frame to indicate that a data frame is the last data frame (**receiving SID_FIRST frame**, Fig. 5); and

interleaving the end-of-data indicating frame according to predetermined algorithms **(interleaving SID_FIRST frame with the last speech data frames, see frames 5-8, Fig. 5),** wherein the end-of-data indicating frame (**SID_FIRST frame, Fig. 5**) according to the predetermined algorithms enables the end-of-data indicating frame to end within the same block carrying the last data frame **(by interleaving TDMA frames for the Last Speech frame with SID_FIRST markers to enable the last speech frame to end in the same block carrying the last speech data frame, see frames 5-8, Fig. 5).**

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the interleaving system and method of Gorday with the teaching of Hakansson in interleaving SID_FIRST frame with the Last Speech frame such that the interleaving system of Gorday will interleave the end-of-data indicating frame according to predetermined algorithms, wherein the end-of-data indicating frame according to the predetermined algorithms enables the end-of-data indicating frame to end within the same block carrying the last data frame.

The motivation to do so is to utilize the unused half bursts so that radio resources are not wasted.

7. Claims 34, 36, 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gorday et al. in view of Sebire (USP 6,870,821).

Regarding claims 34, 36, 40, Gorday discloses all the aspects of the claimed invention set forth in the rejection of the corresponding base claim, wherein the instructions when executed cause the system to:

interleave a first speech traffic frame from a telephone interface over (element 20, Fig. 2) plural bursts according to a first algorithm (**first interleaver interleaves a first set of calls into I-channel interleaving blocks**, col. 4, lines 50-54 and Fig. 2).

interleave a second speech traffic frame from the telephone interface (element 20, Fig. 2) over plural bursts according to a second algorithm (**second interleaver interleaves a second set of calls into Q-channel interleaving blocks**, col. 4, lines 54-58 and Fig. 2).

Gorday does not explicitly show the telephone interface is coupled to a half-rate mobile station.

However, Sebire discloses that a traffic data over a half-rate channel from mobile station is interleaved over k bursts diagonally (col. 2, lines 32-46).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the interleaving schemes of Gorday with the teaching of Sebire in interleaving traffic data from a half-rate mobile station such that speech data received at the interleaving system of Gorday comes from a half-rate mobile station.

The motivation to do so is to use half-rate instead of full-rate to accommodate for the time when the volume of transmissions is high within the cell of a base station to ensure bandwidth is available when it is needed and not wasted.

Allowable Subject Matter

8. Claims 5-12, 14-16, 18-29, 31-33, 37-39, 41 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

In claim 5, the data is carried in data frame N starting in block B(x), and wherein interleaving the data frame N according to the first and second algorithms comprises interleaving the data frame N over blocks $B(x + 2k)$ and $B(x + 2k + 2)$, where $k = \text{INT}(N/2)$.

In claim 14, wherein the last data frame is data frame M starting in block B(x), wherein, if M is odd, interleaving the data frame M comprises interleaving the data frame M over bursts in the last frame in block B(x) and the first three frames of B(x+2), and wherein interleaving the end-of-data indicating frame comprises interleaving the end-of-data indicating frame over bursts in the last three frames of block B(x+2).

In claim 20, data frames I, $I = 0$ to M, are received starting in block B(x), the controller adapted to interleave data frame I over blocks $B(x + 2k)$ and $B(x + 2k + 2)$, where $k = \text{INT}(I/2)$.

In claim 38, the first data frame n is interleaved according to the first algorithm in response to n being an even number, and the second data frame is interleaved according to the second algorithm in response to n+1 being an odd number.

In claim 39, an article comprising at least one storage medium containing instructions that when executed cause the system to:

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in response to detecting that the first mobile station has entered discontinuous transmission mode, re-assign the wireless channel portion to a second mobile station to enable multiplexing of traffic from the second mobile station onto the wireless channel portion while the first mobile station is in discontinuous transmission mode;

receive a request from the first mobile station to re-acquire the wireless channel portion, the request transmitted by the first mobile station in response to the first mobile station exiting discontinuous transmission mode.

In claim 41, a system for use in a mobile communications network, comprising:

in response to receiving the indication that the first mobile station has entered discontinuous transmission mode, to multiplex traffic from a second mobile station onto the wireless channel portion while the first mobile station is in discontinuous transmission mode, wherein the controller is adapted to further:

receive a request from the first mobile station to re-acquire the wireless channel portion, the request transmitted by the first mobile station in response to the first mobile station exiting discontinuous transmission mode.

Response to Arguments

9. Applicant's arguments with respect to claims 1, 3, 4, 13, 34, 36, 40 have been considered but are moot in view of the new ground(s) of rejection.

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Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Mew whose telephone number is 571-272-3141. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on 571-272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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